REQUEST FOR RECONSIDERATION: REMARKS/ARGUMENTS

Claims 4 and 12-19 are pending in the application.

Claims Rejections 35 U.S.C. 112, first paragraph

Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement over the alleged introduction of new matter by way of an amendment to claim 18 to recite "*natural zein* ***extract***." The rejection asserts that there is no support in the specification, as originally filed, for a claim reciting a composition comprising "natural zein extract" despite the disclosure in the specification that "*natural zein*" means "*an unhydrolized protein obtained from corn ... by known extraction methods or commercially, for example, by Sigma or Fluka*." The Examiner's rejection has been carefully considered.

In the amendment introducing the term "natural zein ***extract***," Applicant cited the following sentence from the originally filed specification in support of the amendment:

> For purposes of the invention, by natural zein is meant an unhydrolyzed protein obtained from corn (*Zea mays*), for example, by known extraction methods or commercially, for example by Sigma or Fluka.

The Examiner asserts that the above sentence "*merely states that any extraction method can be used to obtain natural zein from corn*." Applicant acknowledges that the sentence is a translation from another language, but respectfully points out that the plain English language interpretation is, nevertheless, clear. By natural zein, the description refers to an unhydrolyzed protein (i.e. zein protein) that is obtained from corn by extraction, for example by known extraction methods. The specification furthermore discloses that such proteins (i.e. zein extracted from corn) is available from commercial sources such as Sigma and Fluka.

APPENDIX A is a copy of a product information sheet from Sigma showing that zein from maize (corn), as sold by Sigma, is a purified protein. The sheet references the separation of proteins from corn using alcohol, which one of skill in the art would recognize as an extraction process.

That the specification as originally filed discloses a composition containing a natural zein extract is clear, in part, because an "*unhydrolyzed protein obtained by extraction*" from corn is by definition an "*extract.*" An extract is the result of an extraction according to every day usage and the art accepted meanings of the words "*extraction*" and "*extract.*"

APPENDIX B is a copy of a paper entitled "All About Zein" by a commercial provider of purified zein protein, Freeman Industries, LLC. The document supports reinforces the point that zein is extracted from corn and is therefore an extract.

Finally, even the Examiner acknowledges that zein can be **extracted** by any known method. Accordingly, the Examiner acknowledges that natural zein is identified in the present specification as an **extract** because the product of an extraction is an extract.

In view of the foregoing arguments, Applicant respectfully requests that the rejection of claim 18 under 35 U.S.C. 112, first paragraph, be withdrawn.

If the rejection is maintained in, Applicant respectfully requests that the Examiner articulate reasoned statements supporting the assertions that [1] protein extracted from a natural source is not an extract and [2] the sentence referenced in support of the amendment to claim 18 "*merely states that any extraction method can be used to obtain natural zein from corn*" and does not indicate that the term "*natural zein protein*" is used in the specification to mean an unhydrolyzed protein extracted from corn by known methods and commercially available from Sigma and Fluka.

Claims Rejections 35 U.S.C. 103

Claims 4, 12, 13, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quisling (US 2,383,990) in view of Rath (US 5,972,322). The Examiner's rejection has been carefully considered.

I. Applicant Argues that claims 4, 12, 13, 18, and 19 are patentable over the cited prior art because the rejection of these claims does not address each and every limitation recited in the rejected claims.

Claim 18 recites the limitation of a method comprising the step of bringing hair into contact with an agent comprising 0.01 to 10.0 percent by weight of unhydrolized natural zein ***extract*** obtained from corn. The rejection of record does not address this limitation. Consequently, the rejection does not establish a prima facie case for obviousness as required under 35 U.S.C. 103(a).

Page 6 in the Office Action mailed 08 June 2010 responds to this argument by asserting that the limitation of a "*natural zein extract*" is new matter, specifically indicating that this limitation was not addressed in the rejection of claim 18.

II. Applicant argues that claims 4, 12, 13, 18, and 19 are patentable over the cited prior art because the rejection errs in the interpretation of the meaning of the word "*restructuring*" in claim 18. The rejection incorrectly equates setting, waving, or curling of hair by a prolamine surface coating as taught by Quisling with the restructuring of keratin fibers as recited in present claim 18.

The rejection cites Quisling as teaching the use of a composition containing 20% zein in a hair setting, waving, or curling solution. According to Quisling, zein is used as a coating material that is not to be rinsed or washed from the hair and is resistant to removal by water and aqueous solutions. The rejection asserts that the following

passage from page 1, column 2 of Quisling teaches the restructuring of hair using natural zein (prolamine):

> **Another object of my invention is to provide a prolamine surface coating for hair suitable for serving as an improved setting, waving and/or curling agent which shall possess the advantage over the present substances used for that purpose of being of pleasant odor and less injurious to the hair. This would particularly pertain to the prior highly ammoniacal alkaline solutions applied to hair before permanent waving.**

Improved setting, waving, and/or curling of hair taught by Quisling is not equivalent to "*restructuring*" hair recited in claim 18, as asserted in the rejection. Reading Quisling in context, it is clear that zein protein is used to coat the hair in order to hold it in a specific shape to set, wave, or curl the hair. Quisling in no way implies that zein changes the structure of the hair (as in a permanent wave). One of skill interpreting present claim 18 as broadly as possible, would reasonably interpret "*restructuring*" as a process that involves more than simply coating hair shafts.

In response to Applicant's argument, the Office Action asserts that the Examiner's interpretation of "*restructuring*" is reasonable because no definition for "*restructuring*" is provided in the present specification. Applicant respectfully disagrees and refers the Examiner to page 3, second paragraph, in the present specification where the restructuring of hair is indicated as an alternative expression for the **repair** of keratin fibers. Accordingly, the broadest reasonable interpretation of "*restructuring*" hair as recited in the context of "improving the condition of the hair" in claim 18, would require more than merely coating the hair with an insoluble prolamine shell.

III. Applicant argues that one of ordinary skill in the art, at the time the invention was made, would not have been motivated to combine the cited references as asserted in the rejection.

Rath teaches a method for conditioning hair comprising the steps of applying to the hair a composition comprising corn gluten, not purified zein, followed by rinsing of the hair. Accordingly, one of ordinary skill reading Rath would have understood that a hair treatment composition containing 20% or more **corn gluten** could have been used in a method to strengthen protein deficient hair. The assertion made in the rejection that zein and gluten are equivalent is not factually accurate. Zein is a constituent of corn gluten but zein is not structurally or functionally equivalent to corn gluten. While corn gluten contains zein, corn gluten contains other components, including lipids, glycerol, and sugars, with zein comprising less than half of corn gluten by weight. There is no teaching or suggestion in any of the cited references that the zein component of corn gluten is responsible for conditioning hair or that corn gluten would still function as a conditioning agent without the non-zein components present. Consequently there is no teaching or suggestion that using purified zein would in any way improve upon the Rath invention.

Quisling teaches a method for holding the shape of hair by applying an alcoholic zein solution to the hair to form a water insoluble coating on the hair. Quisling clearly teaches the use of zein in a coating agent to be left in the hair to provide hold. Consequently, any associated method would not include rinsing the hair. All of the Quisling compositions are either water insoluble or substantially water insoluble (col 1):

> **specification. The coating materials of my invention are flexible, do not crack off or come off easily on friction, do not come off or become sticky when moist, and the solvents for the prolamines are pleasant smelling and relatively not inflammable. Easily procurable solvent sub-**

One of ordinary skill would not have been motivated to modify a method of conditioning hair with corn gluten to use zein in place of corn gluten based upon Quisling because there would have been no reasonable expectation that purified zein would have the same hair strengthening or conditioning property as corn gluten. To the

contrary, Quisling specifically teaches that zein forms an insoluble coating on the hair to make the hair harder and hold its shape in a manner similar to sugar and lacquer:

> friction. Lacquer has the disadvantage of requiring a highly inflammable and ill-smelling solvent in its application and removal, as well as the tendency to crack off easily on friction. Carbohydrate materials have the tendency to become sticky and rub off easily when moist. All these disadvantages have been overcome by the use of prolamines as described in the present specification. The coating materials of my in-

One of ordinary skill in the art would not have been motivated to modify the method of coating hair with zein as taught by Quisling to replace zein with corn gluten according to Rath because one would have had no reasonable expectation that corn gluten would have coated the hair in the same way as zein.

Zein is applied to hair in the form of a lower alcohol or alcohol-water mixture according to Quisling:

> inflammable. Easily procurable solvent substances for applying my plastic materials include the lower alcohols, such as methyl, ethyl, propyl, and butyl alcohols and the lower glycols or preferably aqueous solutions of these solvents. Solvents for removing the coating material of my invention include the aforementioned solvents.

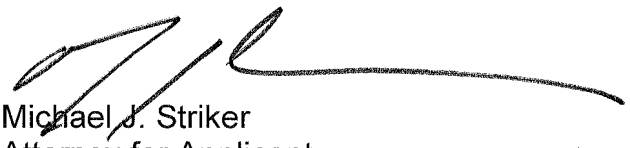
Rath teaches a shampoo or conditioner (abstract). There would have been no motivation to use a water insoluble protein normally applied as alcoholic solution in a hair shampoo or conditioner because there was no evidence for zein having any hair conditioning properties. Furthermore, one would have had no reasonable expectation of success because the media in which corn gluten and purified zein were applied to hair were completely incompatible.

In view of the foregoing arguments, Applicant respectfully requests that the rejection of claims 4, 12, 13, 18, and 19 under 35 U.S.C. 103(a) as being unpatentable over Quisling in view of Rath be withdrawn and that claims 4, 12, 13, 18, and 19 be allowed.

Conclusion

The application is believed to be in condition for allowance. Action to this end is courteously solicited. Should the Examiner have any further comments or suggestions, the undersigned would very much welcome a telephone call in order to discuss appropriate claim language that will place the application into condition for allowance.

Respectfully Submitted,



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